ABSTRACT

THESIS: The Effects of Antinuclear Antibodies (ANA) on Mitochondrial Function in Human Valvular Interstitial Cells

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Purpose: Cardiovascular dysfunction is one of the leading causes of mortality in patients with systemic lupus erythematosus (SLE). Valvular damage is seen in a significant number of SLE patients. The pathophysiological mechanism for valvular damage seen in SLE is not well understood. The antinuclear antibody (ANA) test is positive in more than 94% of SLE patients. Oxidative stress is believed to be a factor in the pathogenesis of SLE. This study aims to determine the effects of ANA on mitochondrial function in human valvular interstitial cells (HVIC) **Methods:** To determine the effects of ANA on mitochondrial function in HVIC. HVIC cells were cultured for 24-hours at 37°C followed by a 72-hour treatment and incubation at 37°C. Treatment groups included positive anti-cardiolipin control, negative anti-cardiolipin mouse serum control, and ANA. Cells were analyzed using a MitoSOX assay, immunofluorescence via a secondary antibody, and a Luciferase assay. **Results:** The ANA treated group produced less ROS compared to the other treatment groups. The ANA treated group

produced more ATP compared to the other treatment groups. Although this data suggests that it is unlikely that ANA decreases mitochondrial function in human valvular interstitial cells, over-activity of mitochondria may be detrimental to cellular health, and could potentially serve as a biomarker of SLE pathogenesis.